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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,409	09/28/2001	Vasanth Philomin	US010475 (702495)	4378

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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EXAMINER	
KIBLER, VIRGINIA M	

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/966,409	PHILOMIN ET AL.	
	Examiner	Art Unit	
	Virginia M Kibler	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-12 is/are rejected.

7)☒ Claim(s) 6,8,9 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 28 September 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 09282001.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: "_____" should be changed to "09/966,406" on page 4, line 26, page 5, line 7, and page 6, line 28; and "_____" should be changed to "09/966,406 and 09/966,408" on page 6, line 1.

Appropriate correction is required.

Claim Objections

2. Claims 6, 8, and 9 are objected to because of the following informalities: "image" should be changed to "image; and" in claim 6, line 10.

Claims 8 and 9 depend on claim 6, and are thereby objected to.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 6, 8, and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "said detected partial view" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

Claim 8 recites the limitation "the Radial Basis Function Network" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "the two or more features" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-6, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. ("Video-Based Online Face Recognition Using Identity Surfaces").

Regarding claim 1, Li et al. ("Li") discloses training a classifier device for recognizing facial images, said classifier device being trained with input data associated with a full facial image (Sect. 3.3; Sect. 2). Li further discloses obtaining a plurality of probe images of a temporal sequence of images (Sect. 3.4); aligning each of said probe images with respect to each other (Sect. 2); and classifying according to a classification method performed by said trained classifier device (Sect. 3.4).

Li discloses warping the texture patterns from the plurality of probe images onto the model (Sect. 1, para. 4; Sect. 2, para. 4; Sect. 4), but does not appear to expressly disclose combining the images to form a higher resolution image. However, it is well known in the art to combine images to form a higher resolution image. Therefore, it would have been obvious to

one of ordinary skill in the art at the time of the invention to have modified the warping of the texture patterns disclosed by Li to expressly include combining the images to form a higher resolution image. The motivation for doing so would have been because it is well known in the art and a higher resolution image would increase the accuracy of the recognition. Therefore, it would have been obvious to modify Li to obtain the invention as specified in claim 1.

Regarding claims 11 and 12, the arguments analogous to those presented above for claim 1 are applicable to claims 11 and 12.

Regarding claim 2, Li discloses each face is oriented differently in each probe image (Figure 4).

Regarding claim 3, Li discloses the probe images are warped slightly with respect to each other so that they are aligned (Sect. 2).

Regarding claim 4, Li discloses automatically extracting successive face images from a test sequence from the output of a face detection algorithm (Sect. 3.2, para. 3).

Regarding claim 5, Li discloses orientating each probe image and warping each image onto a frontal view of the face (Sect. 2; Sect. 4).

Regarding claim 6, Li discloses finding a head pose of the image, defining a generic head model and rotating the generic head model so that it has the same orientation as the given face image; translating and scaling the generic head model so that one or more features of the generic head model coincide with the given face image; and recreating said image to obtain a frontal view of the face (Figure 1; Sect. 2).

7. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. ("Video-Based Online Face Recognition Using Identity Surfaces") as applied to claims 1 and 6

above, and further in view of Gutta et al. ("Mixture of Experts for Classification of Gender, Ethnic Origin, and Pose of Human Faces").

Regarding claim 7, Li does not recognize implementing a Radial Basis Function Network. However, this is well known in the art. Gutta et al. ("Gutta") discloses a classifying step implementing a Radial Basis Function Network trained for classifying inputs based on facial images (pages 948-951; Sects. I-IV).

Li and Gutta are combinable because they are from the same field of endeavor of face recognition. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the classifying step of Li to include implementing a Radial Basis Function Network. The motivation for doing so would have been to increase the accuracy of the face recognition process (Page 957-958, Sect. VIII). Therefore, it would have been obvious to combine Li with Gutta to obtain the invention as specified in claim 7.

Regarding claim 8, the arguments analogous to those presented above for claim 7 are applicable to claim 8. Gutta discloses:

(a) initializing the Radial Basis Function Network, the initializing step comprising the steps of: fixing the network structure by selecting a number of basis functions F, where each basis function I has the output of a Gaussian non-linearity; determining the basis function means μ_I, where I=1,..,F, using a K-means clustering algorithm; determining the basis function variances σ_I^2; and determining a global proportionality factor H, for the basis function variances by empirical search (Pages 950-952; Sect. IV);

(b) presenting the training, the presenting step comprising the steps of: inputting training patterns X(p) and their class labels C(p) to the classification method, where the pattern index is p=1,...,N; computing the output of the basis function nodes $y_I(p)$, F, resulting from pattern X(p); computing the F x F correlation matrix R of the basis function outputs; and computing the F x M output matrix B, where d_j is the desired output and M is the number of output classes and j=1,..,M (Pages 950-952; Sect. IV);

(c) determining the weights, the determining step comprising the steps of: inverting the F x F correlation matrix R to get R^{-1}; and solving for the weights in the network (Pages 950-952; Sect. IV).

Regarding claim 9, the arguments analogous to those presented above for claim 1 and 7 are applicable to claim 9. Gutta disclose classifying a face image by computing the basis function outputs, for all F basis functions; computing output node activations; and selecting the output z_j with the largest value and classifying the image as a class j (Pages 950-952; Sect. IV). Note, the combination of Li and Gutta disclose the step of presenting an unknown higher resolution image from the temporal sequence to the classification method.

Regarding claim 10, the arguments analogous to those presented above for claim 7 are applicable to claim 10. Gutta discloses outputting a class label identifying a class to which the unknown image corresponds to and a probability value indicating the probability with which the unknown image belongs to the class (Pages 950-953; Sect. IV).

Other Prior Arts Cited

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. No. 6,778,705 to Gutta et al. for classification of objects through model ensembles;

Li et al., "Modelling Faces Dynamically Across Views and Over Time," IEEE 2001, pages 554-559; and

Yamaguchi et al., "Face recognition using temporal image sequence," IEEE 1998, pages 1-6.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Virginia M Kibler whose telephone number is (703) 306-4072. The examiner can normally be reached on Mon-Thurs 8:00 - 5:30 and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Virginia Kibler can be reached on (703) 306-4072. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Virginia Kibler
11/14/2004

MEHRDAD DASTOURI
PRIMARY EXAMINER